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INFORMATION REPORT

COUNTRY USSR

SUBJECT An Evaluation of the Book, "Introduction to the Chemistry of Complex Compounds", AA Grinberg

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1. The book, "Introduction to the Chemistry of Complex Compounds", by AA Grinberg, was published by the State Scientific-Technical Publishers of Chemical Literature, Leningrad-Moscow, in 1951.
2. The author has published a large number of papers on inorganic chemistry over the past 30 years. Most of these have appeared in Soviet journals although some earlier papers appeared in German and Swiss journals. He may well be regarded as a leading Soviet authority on complex inorganic compounds.
3. Only two books devoted exclusively to the subject of complex compounds have appeared in the past decade, the present volume and an American book entitled "Chemistry of the Metal Chelate Compounds", Mantell and Calvin, Prentice-Hall, New York, 1952. The latter specializes in the chelate compounds, typified by the metal complexes of ethylenediamine tetraacetic acid (EDTA). Grinberg's book is a revision of an earlier volume, published in 1945, and purports to include recent (Soviet) work. Its purpose is to serve as a text for special university courses in inorganic chemistry and as an aid for those beginning research in the field of complex compounds.
4. The plan of the book is similar to that of a large section by P Pfeiffer in Freudenberg, "Stereochemie", Volume III, 1932. Pfeiffer, however, keeps within the province of classical chemistry while Grinberg devotes considerable space to a description of modern theories of valence as applied to complex compounds. It is interesting to note (page 240) a sharp polemic in which he attacks the concept of "resonance" in chemical structure theory. In so doing he is concurring with a group of Soviet chemists who several years ago, condemned this concept as leading in the wrong direction. In a last chapter on the relation of position in the periodic table to the complex forming capacity of the elements, he treats the subject quite broadly. Formation of crystalline hydrates of the so-called inert gases and hydration of ions are not

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ordinarily treated in discussions of complex formation. It does seem logical, however, to include these phenomena as further illustrations of the effect of secondary valence.

5. The first chapter illustrates the classical chemical methods for determining the constitution of complex compounds. Physical-chemical methods, applicable to compounds in solution or the crystalline state are then briefly described. These include: cryoscopic and ebullioscopic methods, electrolytic conductivity, coagulating power on colloidal sols, acid-base and oxidation-reduction potentiometry, polarography and spectrophotometry.
6. The various classes of coordination or complex compounds are systematically described together with a new system of nomenclature which gives both constitution and spatial configuration. The author then discusses the subject theoretically and finally attempts to unify the ideas of complex formation. No attempt is made to discuss practical fields of application. In this respect the book follows the typical European pattern. By contrast, in the book, "Chemistry of the Metal Chelate Compounds", the role of complex compounds in water treatment, catalysis, separation of radionuclides, treatment of metal poisoning, etc, are discussed.
7. Grinberg's book gives a large number of references to work of chemists and physicists throughout the world. There seems to be no conspicuous bias toward Soviet work. Included, for example, is a reference to Seaborg, Katz and Manning, "The Transuranium Elements". This appears in a chapter on the periodic system and is included for the sake of completeness and bringing the subject matter up to date.

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